



Curriculum Units by Fellows of the National Initiative
2026 Volume V: Chemistry of Cooking

Recipes for Understanding: Foundations of Ratios and Proportions

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This unit was designed to use cooking as a meaningful, hands-on context for teaching fractions, ratios, and proportions to high school special education students who often struggle with foundational mathematical concepts. The unit addresses persistent learning gaps by connecting abstract ideas to real-world applications. Students explore fractions through measuring ingredients, comparing quantities, identifying equivalent fractions, and representing values with area models, sets, and number lines. They then distinguish ratios from fractions by examining relationships between ingredients in recipes and investigating how changing ingredient ratios affects the final product, including the role of chemical processes such as leavening and emulsification. They also connect these math concepts to skills they are also using in their foundational Chemistry class. Students extend this understanding to proportions by scaling recipes, solving for unknown quantities, and maintaining equivalent relationships while changing serving sizes and determining cost per serving. Instruction incorporates evidence-based strategies that take students from guided and concrete models to abstract concepts and more independent work. The unit wraps up with an activity combining recipe conversions, unit rates, and recipe modifications while reinforcing Algebraic Reasoning and Geometry standards. This combination of math, science, and real-life experiences helps students remain engaged while building confidence with fractions, ratios, and proportions.

(Developed FNDL Math Models, grades 10-12; recommended Math Intervention, grades 7-12)

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